THE REGIONAL STUDIES OF LIVING STANDARD: METHODOLOGICAL APPROACHES

Daiva Verkulevičiūtė-Kriukienė[1]

Klaipėda University (Lithuania)

ABSTRACT
The methodological approaches of determining of living standard in regions are presented in this article. Studies of living standard are complex, and in order to compare regions, multivariate statistical methods are suggested for use. Other approaches may specify and clarify the regional features of living standard. The regional cost of living surveys in Lithuania studies are not prevalent, but the methodology can be adapted to the Lithuanian case.
KEYWORDS: *living standard, regional researches, cost of living.*

JEL CODES: O18, R13, R23.

Introduction

A lot of researches of living standard have been completed in the world, starting from the local level and finally on global level. Important places among these studies have the researches of living standard in the regions.

Improvement of people's living standard is one of the most important objectives of regional policy. But the question is what methods should be used to analyze the living standard and the differences between regions or other administrative units? At a certain level of economic development of the state more and more attention is paid to the development of regional disparities reduction. (Simanavičienė, Kilijonienė, 2005). Therefore, very important is the assessment of living standard of areas and regional differences of living standard.

These issues form the objective of the study – to analyze the methodological approaches of determining of living standard in regions.

The tasks of the research:

- To identify the main research methods of living standard those are used to investigate the regions.
- To investigate the calculation methods of cost of living and to determine the ability to calculate cost of living in regions of Lithuania.

Systemized approach allows to select the most suitable methods for the analysis of regional living standards in further studies.

The objective of the research – living standard.

Methods. Scientific analysis of the literature used in the work: the researches of various authors are analyzed and summarized.

[1] Daiva Verkulevičiūtė-Kriukienė – Faculty of Social Sciences, Klaipėda University, lecturer. Scientific interests: social-economic and territorial processes
E-mail: verkuleviciute.daiva@gmail.com

Living standard can be understood as a complex consisting of three components: the level of well-being, accumulation of human capital and the level of human development. When the level of well-being is investigating, such components are usually analyzed: income for household consumption and supply of material goods; population distribution according to the degree of income and consumption; subsistence level; poverty level (Уровень жизни (...), 2007: 1–2).

Household surveys are one of the main sources of living standard data for countries, regions and settlements. The results of Household surveys provide information about the living standard in the local level and explain the causal factors of living standard distribution.

Of course, surveys of household living standards are very expensive, so it will not cover all households. In addition, household living standards surveys require a lot of resources and therefore to collect data from all households in the region are very complicated.

The investigation of living standard can not be limited on statistical data only and their territorial inequalities in the distribution. Each person's needs are different and each person differently evaluates their standard of living and life satisfaction. Likewise the living conditions and the satisfaction with life of the people may be varying. Therefore, the analysis of living standard is not limited only on objective indicators. Subjective opinion of the people about the material and spiritual satisfaction of need and the standard of living is very important. Living standard in the spatial unit is constituted of many elements as flat, health, education, social status, work, rest, safety, social stability in the background of demographical structure aspects, natural environmental quality and participation in democratic institutions (Coates, Johnston, Knox, 1977; Wiecław-Michniewska, 2004: 120). The standard of living is composed of a very large number of components, involving both social and economic aspects. Consequently many scientists are looking for complex evaluation methodology of social phenomena.

M. Quiroga (2007) presents two interpretations which explain differences between rich and poor areas. According to one opinion, differences between areas reflect differences in the characteristics of the inhabitants living in these areas. Other interpretation says that differences between areas depend not only on characteristics of the inhabitants and the gap can be attributed to local factors (Quiroga, 2007: 7). M. Quiroga argues that the well – being of household is a linear function of household characteristics and of the region where the household resides (Quiroga, 2007).

The purpose, objectives, and studied habitat determine the choice of methods, as well as the indicators used. Sometimes, due to lack of statistical data and the high cost is necessary to eliminate one or the other methods, or are replaced by other methods, or modify them. It is necessary to take into account the specifics of the area under study, the geographical location, socio-demographic structure. However, the study of mentioned specifics is not a objective of this paper, it requires a separate analysis, so this article will not discuss it. Below, several models and techniques are discussed, which can analyze the standard of living within and between regions.

1. Research methods of living standard

The living standard is a complex phenomenon consisting lot of components, so we need to investigate it comprehensive in terms of territory. The indicators are evaluated using multivariate statistical methods. First the basic characteristics were calculated. In the next step multivariate statistical methods are using. Factor analysis allows analyzing the interdependence of variables therefore the base data are reducing on the emerging factors. In the case of selecting and analyzing the indicators of living standard, the correlation coefficient is often calculating (Fig. 1).

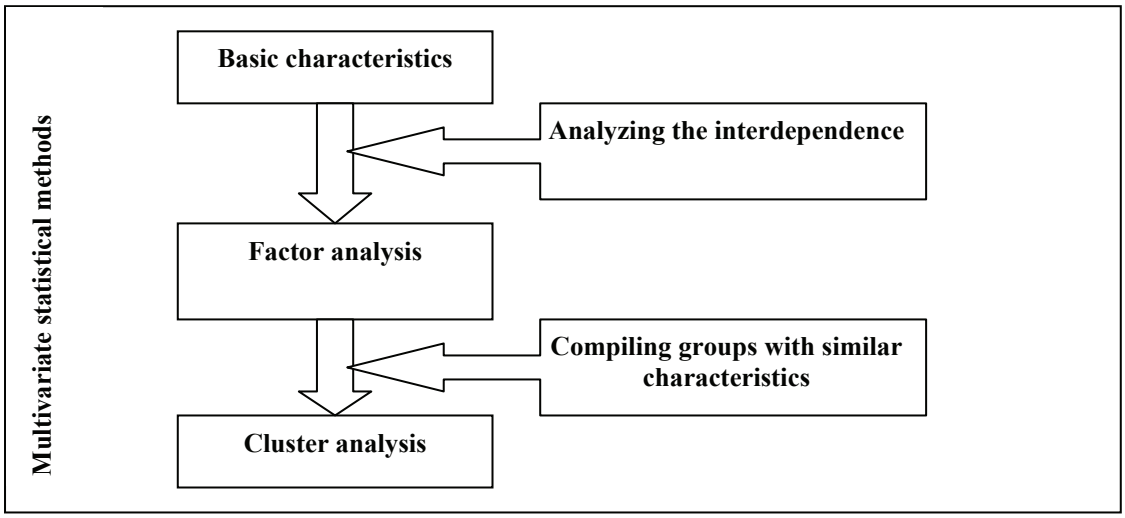

Figure 1. The scheme of complex analysis of living standard

Made by: Vostrá Vydrová, Novotná, 2012: 409; 413

In order to avoid collinearity, the measures that are excessively correlated to other measures it necessary to eliminate (Winiarczyk-Razniak, Razniak, 2011; Vostrá Vydrová, Novotná, 2012: 409; 413). The various authors select different groups of indices. For example Winiarczyk-Razniak at al. (2011) identified the following groups: environmental protection, living conditions (housing), community infrastructure, healthcare, education and culture. An average is calculating for each group, to create a comprehensive index (Winiarczyk-Razniak, Razniak, 2011: 32). M. Płaziak divides the indicators into four groups: the accommodation, apartment infrastructure and equipment, education and culture, health (Table 1).

Table 1. Indicators of living standard proposed by various authors

Group of indicators	Indicators
Accommodation	Useful area per resident, residents per room, newly commissioned apartments per 1000 marriages, number of finished apartments per 10,000 inhabitants
Apartment infrastructure and equipment	Mains household water consumption per resident, telephone subscribers per 1000 inhabitants, the percentage of inhabitants with access to sewage systems
Arable land	The number of hectares for each region
Environmental	The coefficient of ecological stability index number, the amount of parkland and other green community spaces (m^2 per inhabitant)
Infrastructure	The roads of different classes and motorway, the number of hospitals, the number of units of cultural, entertainment and recreation, the percentage of inhabitants served by wastewater treatment plants, the number of inhabitants per movie house seat
Social-economic	The average wage and salary, the number of women status of the population, the ratio of unemployed in the total labor force, the university education, the population of the loss or reduction of work ability; the number of pension recipients; elementary school pupils per one teacher, number of elementary school students per classroom, kindergarten capacity, number of children 3–6 years old per preschool desk, per 1000 inhabitants, number of volumes lent in libraries per one reader, surgeons per 10000 inhabitants, number of physicians per 10000 inhabitants, pharmacies per 10000 inhabitants, infant mortality per 10000 live births

Sources: Vostrá Vydrová, Novotná, 2012: 408; Płaziak, 2004: 108; Winiarczyk-Razniak, Razniak, 2011: 32

In order to compare one territorial unit among other territorial units by the standard of living indicators, the values are standardized using the following formula:

$$Z_{ij} = \frac{X_{ij} - \overline{X_i}}{S_i}$$

where X_{ij} is the value of variable i for spatial unit j; $\overline{X_i}$ is the mean value of the variable i, S_i is the standard deviation of the variable i.

Standardized values of every territorial unit are aggregated with the aim to create the synthetic index (Płaziak, 2004: 109; Sobala-Gwosdz, 2004) or a comprehensive index (Winiarczyk-Razniak, Razniak, 2011). In each unit the minimum and the maximum values can be excluded (Sobala-Gwosdz, 2004: 2).

Various authors try to solve the problem – how to calculate the values, that they reflect the nature destimulating factors. M. Płaziak (2004) proposed these values multiply by -1.

It's necessary to mention that some studies proposed not counting regional data, which is as outliers in Cluster analysis.

M. Dumbliauskienė and S. Jarmalavičienė (2012) have expanded the concept of quality of life based on expert surveys. They finally formulated indicators, corrected of criteria and indices critical for quality of life and determine their significance coefficients. In the final phase of quality of life assessment statistical indicators (indicators) are differentiated in the rankings. The developed methodology is based on the combined qualimetric research method (Dumbliauskienė, Jarmalavičienė, 2012: 12).

The evaluation matrix of quality of life based on the technological scheme (Fig. 2):

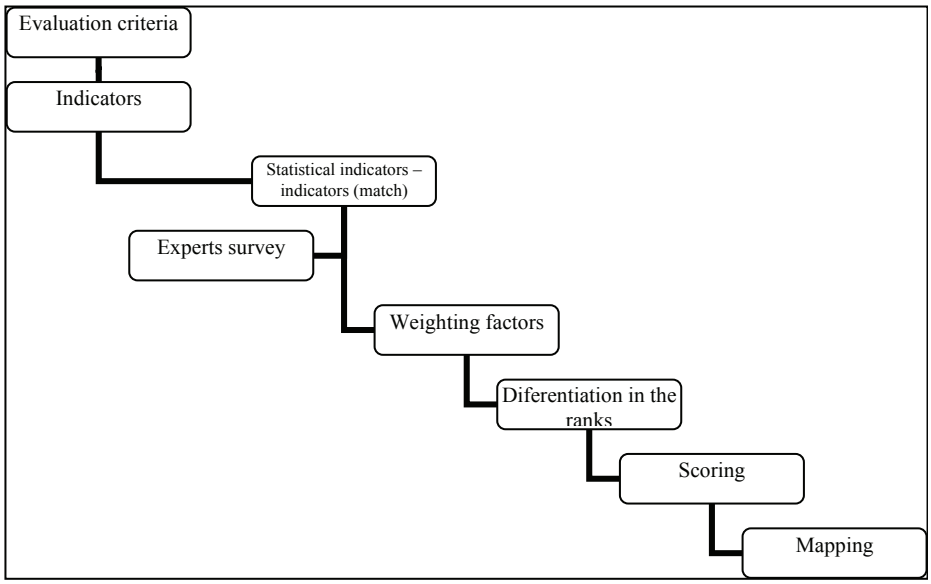

Figure 2. The evaluation matrix of quality of life

Made by: Dumbliauskienė, Jarmalavičienė, 2012

Quality of life as well as the standard of living has affected the life expectancy. Therefore, S. Dowrick at all (2003) proposed the calculation of life expectancy and average consumption of goods and services. This approach is logical, because the individual's life expectancy depends on the satisfaction of material and spiritual needs.

Some authors believe that GDP is the closest to the living standard. R. Létourneau, M. Lajoie (2000) measures the standards of living between Canadian provinces and U.S. States through real GDP per capita. In this equation living standard is equivalent to the real GDP per capita:

$$GDP/POP = GDP/E \times E/POP,$$

where *GDP/POP* (real *GDP* per capita); *GDP/E* (labour productivity); *E/POP* (employment rate) (Létourneau, Lajoie, 2000: 9).

However, many authors criticize the *GDP* as the main indicator of living standard, because *GDP* can not fully reflect the person's living standard.

There is a need to compare each individual European Union regions according to the living standard as the European Union expands. J. Novotný (2011) analyses the convergence in living standards among EU – 27 regions, as well as the divergence, polarization and another components of regions.

N. Kakwani (1993) derived an Achievement index that allows comparing the living standard of countries, but it can also be used to compare the regions. An Achievement index is computing by formula:

$$F(y, M_0, M) = \frac{100 \times [\ln(M - M_0) - \ln(M - y)]}{\ln(M - M_0)}$$

where y is a value of an indicator of living standard that has a minimum value of M_0 and a maximum value of M.

To evaluate the Achievement index the 5 social indicators were chosen: life expectancy at birth, adult literacy rate, net primary enrollment rate, under-5 survival rate, births attended by skilled health personnel. To compute the achievement index, the minimum and maximum values need to be specified (Kakwani, 1993; Son, 2009: 8).

2. Cost of living: understanding and assessment methods

In the Western tradition, the cost of living reflects such income, which provide a "decent living" in accordance with the established standards of consumption. In Russian practice, the cost of living reflects the level of income that provides minimum power consumption (Уровень жизни (...), 2007: 2). Cost of living includes the consumption expenditures for food, housing, transportation, utilities, health care and so on. For example, in U.S. by Census Bureau data, the Cost of Living Index is a composite index. The nationwide average equals 100 and each index is read as a percent of the national average. The Cost of Living Index is calculated by each U.S. metropolitan area (U.S. Census Bureau, 2012: 478) (Table 2).

The Consumer Price Index measures the average change over time in the prices of consumer goods and services that people buy for everyday living (United States (...), 2007: 1). Cost of Living Index of the territorial dimension is widely used to compare the standard of living in cities and regions.

There seems to be a general presumption that rural areas benefit from lower costs of living than urban areas (Kurre, 2003). These estimates find that the average urban resident pays more than rural residents for a broad basket of goods and services.

A very interesting finding was made, that university graduates are more concentrated in regions where the cost of housing is higher than other groups of population, as a result many graduates face a higher cost of living (Rienzo, 2010).

In the United States the Cost of Living Index measures the cost of buying a specific basket of goods and services in a large number of urban areas around North America (Kurre, 2003: 86). The Cost of Living Index model includes different demographic, social economic indicators (Table 2).

To measure the cost of living in U.S. cities, the American Chamber of Commerce Research Association (ACCRA) index is using. This index helps to rank living standard and real wages/salaries across U.S. cities. In this index the regional prices are comparable to national prices taking into account the national consumption weight (Phillips, Daly, 2009: 4–9).

An experimental index developed in U.S. that uses Fair Market Rent (FMR) data to adjust for geographic differences in the cost of living. When the FMR index is used to adjust for cost of living differences, poverty is higher in metro areas than in nonmetro areas in terms of prevalence, depth, and severity (Jolliffe, 2006).

In the absence of a standard county-level cost of living indicator, the Self-Sufficiency Standard (SSS) was developed. Urban counties tended to have significantly higher costs of living (i.e., self-sufficiency wages/ salaries) than rural counties (Unlocking Rural (…), 2007). SSS indicators are costs of food, costs of housing, costs of health insurance, costs of childcare and so on.

Another measure of the cost of living is a Retail Price Index that partially updates the national Retail Price Index with a regional housing index (Rienzo, 2010: 1).

Table 2. Some models of Cost of living and their indicators

Cost of Living index (Composite index (100 %) (U.S. Census Bureau, 2012: 478–479)	**COL model indicators (Kurre, 2003: 98–99)**	**Self-Sufficiency Standard (SSS) indicators (Unlocking Rural (…), 2007)**
Miscellaneous goods and services (32 %)	Population in area	Costs of food
Housing (29 %)	People per square mile in area	Costs of housing
Grocery items 13 %)	Income per capita of residents in area	Costs of health insurance
Transportation (12 %)	Rate of growth of population or aggregate income in area	Costs of childcare
Utilities (10 %)	Utility rates (prices) in area	Costs of transportation
Health care (4 %)	Government cost per unit of service in area	Taxes
	Unemployment rate of area	Other basic expense
	Dummy variable for the census region in which area is located	

Sources: U.S. Census (…), 2012: 478–479; Kurre, 2003: 98–99; Unlocking Rural (…), 2007

What are the regional cost of living surveys in Lithuania? These studies require a lot of human and financial resources but the methodology can be adapted to the Lithuanian case to compare the cost of living in different regions.

Conclusions

Complexity is one of the most important features of living standard surveys. However, not all data are available for a number of regional living standards surveys, so we have the data to calculate or replace by others. Selected living standard indicators must be standardized in order to compare fully the regions. Factor analysis is carried out to select indicators, while cluster analysis describes the regional distribution of living standards. Other approaches may specify and clarify the regional features of living standard.

The cost of living survey is more common in United States, but on the basis of existing studies, the methodology can be adapted to the Lithuanian case in order to assess the cost of living in the regions of Lithuania. However, these studies require a lot of human and financial resources. Even more difficult is to compare the cost of living in several regions of different countries.

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REGIONINIAI GYVENIMO LYGIO TYRIMAI: METODOLOGINIAI POŽIŪRIAI

Daiva Verkulevičiūtė-Kriukienė
Klaipėdos universitetas (Lietuva)

Santrauka

Pasaulyje atlikta gausybė mokslinių tyrimų gyvenimo lygio tematika, pradedant vietinio lygio ir baigiant globalaus lygio tyrimais. Šioje tyrimų grandinėje svarbi vieta tenka gyvenimo lygio tyrimams regionuose. Žmonių gyvenimo lygio kėlimas yra vienas svarbiausių regioninės politikos uždavinių. Tik kyla klausimas, kokius metodus reikėtų taikyti, norint analizuoti gyvenimo lygį ir jo skirtumus tarp regionų arba kitų administracinių vienetų? Valstybei pasiekus tam tikrą ekonomikos augimo lygį, vis labiau stengiamasi mažinti šalies regionų išsivystymo skirtumus (Simanavičienė, Kilijonienė, 2005). Todėl turėtų būti svarbu įvertinti gyvenimo lygį regionuose ir nustatyti regioninius gyvenimo lygio skirtumus. Šios problemos leidžia

suformuoti tyrimo tikslą: išanalizuoti gyvenimo lygio nustatymo regionuose metodinius požiūrius. Darbe formuluojami du pagrindiniai uždaviniai:

- Nustatyti pagrindinius gyvenimo lygio tyrimų regionuose metodus.
- Ištirti pragyvenimo išlaidų skaičiavimo metodus ir numatyti, kaip juos taikyti, siekiant nustatyti Lietuvos regionų gyventojų pragyvenimo išlaidas.

Susisteminti požiūriai atliekant tolesnius tyrimus leis pasirinkti tinkamiausius regioninės gyvenimo lygio analizės metodus.

Darbe taikoma mokslinės literatūros šaltinių analizė: analizuojami, sisteminami įvairių autorių tyrimai, daromi apibendrinimai.

Namų ūkių tyrimai yra vieni pagrindinių gyvenimo lygio nustatymo šaltinių gyvenvietėse, regionuose ir valstybėse. Tačiau namų ūkių gyvenimo lygio tyrimai yra labai brangūs ir neapima visų namų ūkių, dėl to regionų tyrimuose juos taikyti sudėtinga. Gyvenimo lygio tyrimuose remiamasi ne tik statistiniais duomenimis. Dažnai tiriama ir subjektyvi gyventojų nuomonė apie pasitenkinimą gyvenimu, kuris labai skiriasi net esant panašioms gyvenimo sąlygoms. Gyvenimo lygį nusako daug įvairių socialinių-ekonominių komponentų, todėl sukurta nemažai metodologijų, kurios padeda įvertinti gyvenimo lygį įvairiais aspektais. Metodų ir rodiklių pasirinkimą lemia tyrimų tikslai, uždaviniai, tiriama vietovė ir jos socialinė-ekonominė specifika. Šiame straipsnyje pristatomi įvairių autorių pateikti metodai, kurie taikomi arba gali būti taikomi gyvenimo lygio regioniniuose tyrimuose.

Tiriant gyvenimo lygį, dažnai taikomas įvairių matematinių-statistinių rodiklių kompleksas: faktorinė, klasterinė analizės ir pan. Tačiau dažnai prireikia palyginti tarpusavyje keletą teritorinių vienetų. Tokiu atveju siūloma turimus duomenis standartizuoti. Kartais duomenys standartizuojami, norint sukurti sintetinį indeksą. Dažnai autoriai sprendžia problemą, kaip apskaičiuoti rodiklius, kurie nusako neigiamus socialinius-ekonominius reiškinius. M. Płaziak (2004) siūlo tokių rodiklių reikšmes dauginti iš -1.

Gyvenimo lygis ir gyvenimo kokybė neatsiejami nuo žmonių gyvenimo trukmės. Todėl į tyrimus gali būti įtraukiama ir gyvenimo trukmės, prekių ir paslaugų vartojimo reikšmės. Kituose tyrimuose (Kakwani, 1993) į gyvenimo lygio skaičiavimus įtraukiami ne tik būsimo gyvenimo trukmės, bet ir suaugusiųjų raštingumo, išgyvenusiųjų iki 5 metų vaikų skaičiaus, gimdymus priimančių sveikatos priežiūros specialistų skaičiaus duomenys.

Įvairiose pasaulio valstybėse skiriasi ir pragyvenimo išlaidų sampratos požiūriai. Pavyzdžiui, Vakarų valstybėse pragyvenimo išlaidos turi užtikrinti orų gyvenimą, laikantis nustatytų standartų. Tuo tarpu Rusijoje gyvenimo išlaidos atitinka tokias pajamas, kurios užtikrina minimalų vartojimą. Dėl tokių skirtingų požiūrių galima palyginti pragyvenimo išlaidas tarp vienos valstybės regionų, bet ne tarp skirtingų valstybių regionų. Tačiau daugelio tyrimų rezultatai dažniausiai patvirtina prielaidą, kad kaimuose pragyvenimo išlaidos yra mažesnės negu miestuose. Ypač plačiai pragyvenimo išlaidų tyrimai atliekami JAV, kur sukurta nemažai modelių, kaip įvertinti gyvenimo lygį JAV miestuose ir valstijose.

Remiantis jau atliktais tyrimais, pragyvenimo išlaidų tyrimų metodiką galima pritaikyti Lietuvos atvejui ir įvertinti pragyvenimo išlaidas Lietuvos regionuose. Tačiau šiems tyrimams atlikti reikia nemažai žmogiškųjų ir finansinių išteklių. Dar sudėtingiau būtų palyginti kelių valstybių pragyvenimo išlaidas skirtinguose regionuose.

PAGRINDINIAI ŽODŽIAI: *gyvenimo lygis, regioniniai tyrimai, pragyvenimo išlaidos*.

JEL KLASIFIKACIJA: O18, R13, R23